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REMARKS/ARGUMENTS

Claims 25-29 are pending in this application. By this Amendment, Applicants AMEND the Title of the Invention and the Abstract of the Disclosure.

The Examiner objected to the Title of the Invention for allegedly containing minor informalities. Applicants amended the Title of the Invention to be "A METHOD FOR MANUFACTURING A SURFACE ACOUSTIC WAVE DEVICE USING A SHEAR HORIZONTAL TYPE SURFACE ACOUSTIC WAVE." Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the Title of the Invention.

The Examiner objected to the Abstract of the Disclosure for allegedly containing minor informalities. Applicants amended the Abstract of the Disclosure to correct the minor informalities noted by the Examiner. Applicants have also amended the Abstract of the Disclosure to state that the "ripple caused by a transversal mode wave is about 1.5 dB or less" to more accurately reflect the feature recited in Applicants' claim 25. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the Abstract of the Disclosure.

Claims 25-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujimoto et al. (U.S. 5,953,433) in view of Abe (U.S. 5,850,167). Applicants respectfully traverse the rejection of claims 25-29.

Claim 25 recites:

"A method for manufacturing a surface acoustic wave device using a Shear Horizontal type surface acoustic wave, comprising the steps of:
preparing a quartz substrate;
forming a metal film having a larger mass-load effect than that of aluminum on the quartz substrate; and
patterning the metal film to form at least one interdigital transducer by one of reactive ion etching and a lift-off process such that a metallization ratio 'd' and a normalized film thickness h/λ of the at least one interdigital transducer which makes a spurious transversal mode ripple to be about 1.5 dB or less are satisfied,
where 'd' is the metallization ratio of the interdigital transducer, ' λ ' is the

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wavelength of a surface acoustic wave, and 'h' is the film thickness of the interdigital transducer." (emphasis added)

Applicants' claim 25 recites the steps of "preparing a quartz substrate" and "patterning the metal film to form at least one interdigital transducer by one of reactive ion etching and a lift-off process such that a metallization ratio 'd' and a normalized film thickness h/λ of the at least one interdigital transducer which makes a spurious transversal mode ripple to be about 1.5 dB or less are satisfied." With the improved features of claim 25, Applicants have been able to provide a method of manufacturing a surface acoustic wave device which has electrodes made from a material having a larger mass-load effect than aluminum, which is made to be very compact, and which has a structure that minimizes and eliminates ripples caused by a transversal mode wave (see, for example, the paragraph bridging pages 4 and 5 of the originally filed Specification).

Applicants agree with the Examiner that Fujimoto et al. fails to teach or suggest a the feature of "patterning the metal film to form at least one interdigital transducer by one of reactive ion etching and a lift-off process such that a metallization ratio 'd' and a normalized film thickness h/λ of the at least one interdigital transducer which makes a spurious transversal mode ripple to be about 1.5 dB or less are satisfied" as recited in Applicants' claim 25. The Examiner has relied upon Abe to allegedly cure this deficiency.

First, Abe teaches that the amplitude ripple of a surface acoustic wave device is 0.2 dB, NOT the spurious transversal mode ripple of a surface acoustic wave device is about 1.5 dB or less as recited in Applicants' claim 25. Lines 14-16 of column 17 of Abe teach that "the amplitude ripple ... is a value of a difference between a maximum insertion loss and a minimum insertion loss in the passband." The first full paragraph on page 2 of the originally filed Specification teaches that the spurious transversal mode ripple is caused by transversal mode waves generated by the IDT of the surface acoustic wave device. That is, the amplitude ripple of Abe is not the spurious

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transversal mode ripple recited in Applicants' claim 25.

Second, Abe is directed to a lithium tetraborate single crystal substrate, NOT a quartz substrate as recited in Applicants' claim 25. The Examiner has failed to explain why one of ordinary skill in the art would apply the method of Abe of patterning a metal film on a lithium tetraborate single crystal substrate to the quartz substrate of Fujimoto et al. Further, the Examiner has failed to explain how the method of Abe of patterning a metal film on a lithium tetraborate single crystal substrate could possibly achieve the same results when applied to the quartz substrate of Fujimoto et al.

Thus, Applicants respectfully submit that the combination of Fujimoto et al. and Abe fails to teach or suggest the features of "preparing a quartz substrate" and "patterning the metal film to form at least one interdigital transducer by one of reactive ion etching and a lift-off process such that a metallization ratio 'd' and a normalized film thickness h/λ of the at least one interdigital transducer which makes a spurious transversal mode ripple to be about 1.5 dB or less are satisfied" as recited in Applicants' claim 25.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 25 under 35 U.S.C. § 103(a) as being unpatentable over Fujimoto et al. in view of Abe.

Accordingly, Applicants respectfully submit that Fujimoto et al. and Abe, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in claim 25 of the present application. Claims 26-29 depend upon claim 25 and are therefore allowable for at least the reasons that claim 25 is allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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